

## Section 6-4: Rectangles

By the end of this lesson, you should be able to answer:

- How do you recognize and apply properties of rectangles?
- How do you determine if parallelograms are rectangles?

Vocabulary:

1. Rectangle

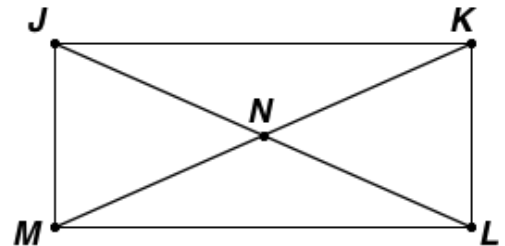
- Properties of a rectangle:

Theorems:

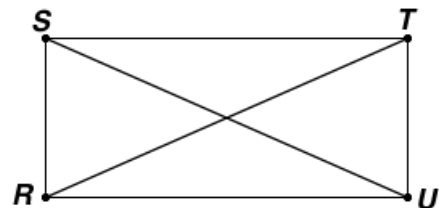
6.13 - Diagonals of a Rectangle:

6.14 - Diagonals of a Rectangle Converse:

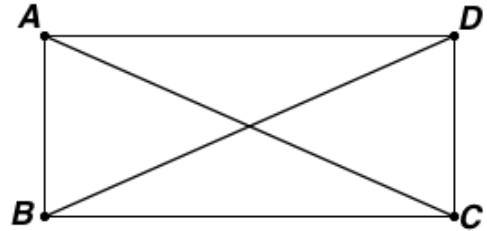
*Example 1:* A rectangular garden gate is reinforced with diagonal braces to prevent it from sagging. If  $JK = 12$  feet and  $LN = 6.5$  feet, find  $KM$ .



*Example 2:* Quadrilateral  $RSTU$  is a rectangle. If  $m\angle RTU = (8x + 4)^\circ$  and  $m\angle SUR = (3x - 2)^\circ$ , find  $x$ .



*Example 3:* Some artists stretch their own canvas over wooden frames. This allows them to customize the size of a canvas. In order to ensure that the frame is rectangular before stretching the canvas, an artist measures the sides of the diagonals of the frame. If  $AB = 12$  inches,  $BC = 35$  inches,  $CD = 12$  inches, and  $DA = 35$  inches, how long do the lengths of the diagonals need to be?



*Example 4:* Quadrilateral  $JKLM$  has vertices  $J(-2, 3)$ ,  $K(1, 4)$ ,  $L(3, -2)$ , and  $M(0, -3)$ . Determine whether  $JKLM$  is a rectangle by using the distance formula.

Problem Set:

"Character - the willingness to accept responsibility for one's own life - is the source from which self respect springs." - Joan Didion